Consortium for Site Characterization Technologies
Board of Technology Users Meeting
EPA Headquarters, Crystal Gateway 1, Arlington, VA
March 5, 1997

Welcome and Announcements

Walt Kovalick (U.S. EPA/TIO) convened the Consortium for Site Characterization Technologies (CSCT) Board of Technology User's Meeting and welcomed participants. Before asking the participants to introduce themselves, Kovalick summarized the recent OSWER Directive on Promotion of Innovative Technologies in Waste Management Programs (OSWER Directive 9380.0-25), and announced a new TIO service called TechDirect, an electronic subscriber service that highlights new technical publications and information on site assessment and remediation. He mentioned that a subscription to TechDirect can be obtained through the CLU-IN homepage on the Internet (http://clu-in.com).

Introductions and Announcements from Board Members

Kovalick asked the attendees to introduce themselves and note any specific activity that they have been involved with that may be of interest to the Board. Caroline Purdy (U.S. DOE/EM-50) mentioned the Preferred Alternatives Matrix developed by DOE, which was being formally introduced that day by Jim Owendoff, as a means of prioritizing the selection of technologies and development needs. Larry Reed (U.S. EPA/OERR) mentioned the work his office has done with TIO in establishing Technology Advocates in the EPA Regions. Ted Zagrobelny (U.S. Navy/NAVFAC) noted NAVFAC Director William Quade's recent retirement and the work Quade had done over the years in promoting CSCT. Frank Anastasi noted he was in attendance as a member of the Hazardous Waste Action Coalition representing the engineering consultant community. Dennis Bernia (USAF/Armstrong Laboratory) said he was taking the place of Bruce Nielsen at this meeting, and mentioned the side-by-side testing underway at his lab comparing push and drill technologies for sinking wells.

David Friedman (U.S. EPA/EMMC) noted the work his office is doing to de-balkanize the approach to technology development across EPA programs. Betty Diener (New England Environmental Business Council) described a project the Council is sponsoring with TIO to perform multiple technology demonstrations in the Czech Republic. Michael Jacobsen (Pacific Rim Enterprise Center) identified himself as a representative of the Western Governors' Association Interstate Technology Regulatory Cooperation (ITRC) workgroup, a 26-state effort to establish reciprocity on technology acceptance. Kira Lynch (U.S. Army Corps of Engineers) identified herself as a federal Technology Advocate working with the ITRC program. Howard Fribush (U.S. EPA/OERR) noted that his Center (Analytical Operations) is pushing the use of field methods by the EPA Regions, and mentioned the mobile laboratories operated by EPA. Albert Lee (NIST) mentioned the work he has done under the Rapid Commercialization Initiative (RCI). Other attendees introduced themselves.

Update on Activities of the Environmental Technology Verification (ETV) Program

Eric Koglin (U.S. EPA/NERL) provided an update on the ETV program. Copies of his slide presentation and the *ETV Program Verification Strategy* (EPA 600-K-96-003) were distributed to the group. Koglin reviewed the ETV strategy operating principles and a schedule for the ETV Program. He mentioned that the various ETV pilot programs are in different stages of development, but all are scheduled to be operational by October 1997.

Koglin's update initiated discussion regarding factors impeding the use of innovative technologies at sites. Zagrobelny pointed out that innovative technology firms often go out of business before you can use them. Anastasi added that federal and commercial facilities want to see proven technologies implemented at

their sites. Friedman said that the current trend toward performance-based, rather than technology-based, cleanups should promote the use of innovative technologies.

Update on the Consortium for Site Characterization Technologies

Koglin presented an update on the progress of the CSCT verification program. He indicated that the verification process involves five steps: 1) the selection of vendors; 2) field demonstration of the technology at least twice; 3) preparation and review of the verification report; 4) preparation of the final report; and 5) dissemination and outreach. Two cone penetrometer technologies (ROST and SCAPS) with onboard laser-induced fluorescence (LIF) sensors have completed the process and have verification letters and reports available. Completing the verification process typically costs the vendor $20,000 and EPA $100,000. This illustrates one problem smaller companies may have in financing a demonstration on their own. Anastasi asked who signs the verification statements. Koglin replied that EPA officials on the laboratory director level will sign the statements. Anastasi added he was pleased that the two statements that have been issued, and that they looked good upon cursory review.

Koglin summarized the various stages of completion of other CSCT demonstration verification reports. The portable x-ray fluorescence (XRF) spectrometer report will be signed on March 18. The portable gas chromatograph and mass spectrometer (GC/MS) report is targeted for completion on April 21. The reports for emerging RCRA metal detection technologies are undergoing peer review.

Koglin also summarized ongoing CSCT activities. He reported that the original *Commerce Business Daily* solicitation for innovative sampling techniques and *in situ* monitoring devices issued in June 1996 received 35 responses. After seeking responses by other means, the total now stands at 100. Koglin said CSCT found that the CBD route was not especially effective in drawing solicitations from vendors of mature technologies. CSCT will continue to augment CBD notices with other means of drawing vendors.

Other ongoing CSCT activities include completion of a field characterization guidance manual for CSCT verifications, completion of FY95 draft reports, cultivation of EPA and Regional acceptance, and development of information tools and support. Koglin also discussed the funding for FY97, which he expects to be $500,000. CSCT is funded by the Department of Defense, EPA's Environmental Technology Initiative (ETI)/ETV, the Superfund Innovative Technology Evaluation (SITE) Program, and the Department of Energy's Office of Science and Technology.

Koglin described a representative demonstration schedule, totaling 43 weeks, for the characterization and monitoring program, which was distributed to the Board. One problem with shortening the time frame has been the typical 6 to 8 week waiting period for CBD responses. Koglin said that stricter deadlines will be enforced in the future, while acknowledging that smaller businesses may have a tough time meeting these deadlines. Friedman suggested combining Tasks 1, 2, and 3 to shorten the schedule. Koglin replied that the first three tasks proceed relatively quickly, but agreed that Friedman's idea was feasible. Friedman also suggested stating technology needs up front to weed out inapplicable or immature technologies. Koglin indicated that the requirements are spelled out in the CBD, but vendors have not been clear on what constitutes a "commercial-ready" technology. Their entrepreneurial spirit may cause them to make them overstate the capabilities of their product. The confusion is eliminated, however, when EPA meets face to face with the vendors. These meetings typically result in the vendor acknowledging the actual level of maturity of their technology, and they may withdraw from the demonstration program completely.

Koglin explained that Task 4 of the schedule (preparation and review of the demonstration plan) took additional time because it was an iterative process to identify objectives and necessary data and data quality objectives (DQOs). Task 5 (selection of an appropriate field site) involved sampling to identify the contaminants present; if contaminants that would interfere with the tested technology were present, a new site was selected. Friedman questioned whether this was "stacking the deck?" Would readers know when a technology would not work if the demonstration was conducted where it is most likely to succeed? He pointed out that the sampling must be conducted anyway to determine DQOs in addition to site selection.

Koglin summarized further inefficiencies in the demonstration schedule. He said that it to 12 months to prepare the report for peer review. Distractions at the EPA, such as the government shutdown, and communications problems were also time-consuming. Parker commented that a 10-month demonstration period is a good rule of thumb and attributed progress to good project managers. Koglin emphasized the value of having completed demonstration plans that can be used as templates for future projects. Bernia asked whether CSCT certifies vendors or technologies. Koglin replied that it is vendor verification; each new vendor of a technology is verified separately.

Assessing User Technology Needs/Technology Selection

Koglin distributed a copy of the *Commerce Business Daily* notice posted in August 1996 to solicit vendor participation in the program and discussed the responses to the solicitation. About 35 vendors responded to the CBD solicitation. While CSCT and other ETV programs seek Level 3, commercial-ready technologies for participation in the verification program, most of the respondents to the CBD notice did not have Level 3 technologies ready for commercialization. Rather, they had technologies that may reach Level 3 and participate in the future. Koglin said the CBD notice path was not turning up an adequate number of Level 3 technologies and sought input from the Board on alternatives.

Koglin said the CSCT approach has been to solicit and sponsor demonstrations of vendor-specific technologies, which may be limiting the number of solicitation responses by restricting the focus of the program. He said CSCT is considering using "technology tracks" to solicit technologies within broader technology categories rather than continuing under the vendor-specific approach. Koglin said CSCT is also trying to be careful about the use of the word "characterization" to ensure developers that the program includes monitoring and detection technologies that apply to containment, stabilization, and other post-closure activities as well as the assessment activities implied by the word characterization.

Friedman questioned whether the focus on Level 3 technologies would leave developers of Level 1 and 2 without a program that could provide development assistance. Kovalick said that while the ETV program targets Level 3 technologies, other federal technology development programs, such as the Small Business Innovative Research (SBIR) program, are in place to assist vendors in earlier development stages. Caroline Purdy said there is a need to the availability of programs that support Level 1 and 2 development. Parker said he felt Level 3 was not a useful definition and that the ETV development categories should look beyond considering only an applicant's level of technology development to consideration of the level of business development, the level of engineering development, and the ability to deploy the technology.

Kovalick said he was hearing in this and other comments that CSCT and other ETV programs should respond to the pull of the technology market, rather than trying to push technologies into the market, which is the orientation of CSCT. He asked whether the CSCT mission should be redefined to reflect this change. Kovalick said the original purpose of CSCT was to overcome the "tyranny" of SW-846 that was blocking entry of new characterization, monitoring, and detection technologies into the federal market by defining the demand side. Regulators and decision-makers are only comfortable with methods and technologies that are acceptable under SW-846, leaving new technologies in the lurch. The working assumption under the

technology push approach is that a relatively large number of Level 3 developers in need of assistance via technology verification can be solicited. If there is a relative dearth of Level 3 developers, then CSCT could shift the focus to developers in earlier stages.

Bernia said the issue turns on the flow of venture capital, and noted that federal efforts, such as verification programs and relaxed cleanup standards at brownfield sites, alone will not create a market. The Board discussed building a base of experience regarding Level 2 technologies by demonstrating them side-by-side with Level 3 technologies as part of the verification process. Janis Hastings said Level 3 field GC/MS units had been deployed four times in Region 10, thereby building an experience base. Kovalick said his office will begin publishing an Annual Status Report for characterization technologies similar to TIO's annual report on remediation technologies. Howard Fribush said XRF and GC/MS have overcome skepticism and gained acceptability through use, which starts out sporadically and makes gains over time. Koglin agreed, saying the two factors that operate are the readiness of the technology and the willingness of regulators to use it. The CSCT mission is to overcome the need to demonstrate every technology at every site for every site manager. Purdy agreed, saying that building a track record seems to be only way to get technologies into the market, and noted that the ability of the vendor to operate the technology is as important as anything. Anastasi said the "tyranny" in the process is held by GS-9's: RPMs who can select and use "gold-plated" technologies without consequence, and who are concerned that following any path less than a sure thing may expose them to trouble down the road.

Friedman said this discussion did not address the issue of whether CSCT should continue to demonstrate and verify vendor-specific technologies or shift to technology tracks. Anastasi offered that, in his opinion, the only way to overcome the reluctance of site managers and other regulators to use new technologies is to bypass the regulators and push new technologies into the system by putting them into cleanup contracts. Regulators and site managers are not going to come to new technologies. The site cleanup business is still regulator-driven, and all the market-driven initiatives in the world will not overcome the entrenched preference of regulators for established technology. Anastasi cited the Department of Energy's Preferred Alternative Matrix as an example on one approach. Jim McCreary noted that "issue-forcing" has worked in other contexts, citing the environmental justice efforts in the EPA Regions: RPMs began requesting GIS information when told to target environmental justice communities.

Kovalick asked whether the Board felt the technology track approach was appropriate, and, if so, whether the proposed tracks were right for soliciting Level 3 technologies. Friedman suggested that solicitations be left wide open at first to determine the state of the technology-supply market, then match the responses with technology needs and allocate resources. Tracks should be "picked" after the solicitation process, rather than before as was done last year. Friedman also said there is no need to create tracks, just select technologies that are appropriate for the program. The emphasis should be on letting the market drive technology selection, rather than picking technologies based on perceived future markets. Tracks should be used as management tools only. Powell said the technology tracks are meant to cover the universe of technologies. Kovalick added that the tracks are just a taxonomy, and the idea expressed by Friedman is the intention. Koglin added that the culmination of Friedman's idea would be a single, integrated ETV solicitation, and acknowledged that this may the way to go in the future; however, for now ETV is compartmentalized into narrower, more manageable programs geared toward establishing the verification organizations and helping vendors get a foothold in the process.

Anastasi said there is a need for a total management system to oversee the interworkings of the wide number of federal and state technology development programs. Kovalick said CSCT is always seeking to maintain contact with the network of its counterparts in other programs. Parker said he saw a lot of progress in CSCT, and recalled that the issue before the Board 18 months ago was whether to go forward with third-party verification organizations at all. Now there is significant progress toward establishing a national network of verification organizations. Parker encouraged CSCT to continue to focus on certifying the verification organizations, and added that the solicitations in the CBD or otherwise should simply describe the broad markets of interest to CSCT and see where the supply-market takes the program.

Outreach Activities

Dan Powell led a discussion on CSCT's outreach activities, including working with EPA's other waste programs (especially the RCRA and underground storage tank programs) on policy issues and communicating with states. CSCT also interacts with the EPA Regions through the Technology Advocate network, which includes laboratory service staff. Friedman asked the attendees from the EPA Regions whether those offices had put any effort into developing methods for adapting QA/QC procedures to account for technological advances. McCreary said he was unaware of any work on the issue. Reed said development and refinement of DQOs is steady work and a constant concern for OERR.

Powell noted that CSCT uses the network of Regional Advocates to interact with the ITRC workgroup and other state-based organizations. Jacobsen described the ITRC workgroup's mission, likening it to oversight of a number of "mini-consortia" that includes a subgroup on Accelerated Site Characterization. One of his jobs is to serve as a link between ITRC and CSCT. Koglin noted that he made a presentation on CSCT at an ITRC meeting and sought feedback on any interest the members had in participating in the technology verification and acceptance process. He found that eight states expressed some degree of interest. Koglin said CSCT is seeking letters of endorsement or some other indication of willingness of the states to consider CSCT verification letters and reports when deciding whether to accept a technology. Powell noted that in the scheme of things this step was comparable to getting a leg in the door rather than a toe. Purdy asked whether the ITRC participants were "plugged-in" and in a position to follow up on commitments. Jacobsen said the participants range from department heads to others down the chain. The main function of ITRC is to act as a communication link among the states and with other programs.

Powell said CSCT will issue guidance on presumptive characterizations, similar to EPA's presumptive remedies guidance, which will provide guidelines for matching up generic DQOs related to a set of characterization techniques with generic waste sites (*e.g.*, wood preserving sites, municipal landfills). The guidance is in intended to supplant the reliance on SW-486, which is routinely applied to sites outside of its purview because it is the only available EPA guidance that provides fall back positions for site managers unsure of what is legally defensible.

CSCT will also issue guidance on expedited site assessments that will examine commonalities of various approaches developed by organizations such as ASTM. Powell mentioned that EPA's Office of Underground Storage Tanks (OUST) is working on a manual for expedited characterization of underground tanks. Bob Hitzig (U.S. EPA/OUST) said the OUST manual is going into printing and gave a brief review of the subjects covered, which include:

- the expedited site characterization process (based on the ASTM approach);
- geophysical methods;
- soil-gas surveys (active versus passive);
- direct push technologies; and
- field analytical methods for fuels, including portable GC, detector tubes, and immunoassays.

Friedman asked whether any thought had been given to having SW-486 include the verification reports or letters. Powell said the idea was a good one and he would look into it, but the goal remains to provide a fall back alternative to SW-486.

CSCT is also developing a toolkit on site characterization and assessment methods for municipalities with brownfield sites, which will be similar to the presumptive characterization guidance. This is a prime target area for field analytical techniques, and there is a big push to do a lot of assessments in a short period of time. Powell cited a recent pilot study held at five sites in and around New Orleans, Louisiana. During the study, the field team collected and analyzed 50 to 60 samples per day and was able to generate cost estimates for remediation and refurbishment for all five sites within two weeks.

Powell briefly described other information tools, including VendorFACTS, TIO's data base of vendor information on characterization technologies, the Site Characterization Technology Screening Matrix under development by NAVFAC and TIO, and the Annual Status Reports mentioned earlier.

Kovalick asked the consulting engineers in attendance how they and others in the trade obtained information on technology development. Anastasi identified engineering journal articles, press releases, and some electronic sources, including newsletters available via electronic mail and WebSites like GNET. He said TechDirect looked like a good source. Parker mentioned that Web access is still a problem in some quarters, and DOE is providing fax-on-demand information. Anastasi also mentioned that there is plenty of information available to the consulting engineer community, and the hard workers know where to find it and stay ahead of the game. He said TIO does a good job in maintaining current information and making it available. He also mentioned later that engineers get a lot of information from attending conferences and exhibitions.

Powell asked the attendees from the EPA Regions what will catch the attention of RPMs who are inundated regularly with technical information. McCreary said time is the issue for RPMs, and the trick with new technologies is to create ways to get the technology deployed and tested without causing any delay in the cleanup schedule. He said getting the Regional Technology Advocate into the field will help expedite deployment and testing. Anastasi said the developer and Regional Advocate should be the ones who push the field work, and mentioned that times have become tougher for developers as investment capital has fallen.

Wrap-Up

Kovalick summarized some action items from the meeting:

- CSCT will share the next draft solicitation notice with the members of the Board;
- the ITRC workgroup and CSCT Regional Network will exchange membership lists;
- the next set of verification statements will be distributed to Board (attached).

The meeting adjourned.

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